## What is claimed is:

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1. A method for producing an optically active hydroxymethylated compound, comprising reacting a silicon enolate and formaldehyde, in the presence of a catalyst, in an aqueous solution or a mixed solvent of water and an organic solvent,

wherein the silicon enolate is represented by the following formula (chemical formula 2):

$$\begin{array}{c}
R^7 & OSi(R^8)_3 \\
R^5 & R^6
\end{array}$$

wherein R<sup>5</sup> to R<sup>7</sup> are hydrogen atoms, aliphatic hydrocarbon groups, monocyclic or polycyclic alicyclic hydrocarbon groups, monocyclic or polycyclic aromatic hydrocarbon groups or heterocyclic groups where R<sup>6</sup> is not a hydrogen atom, R<sup>5</sup> and R<sup>7</sup> are not identical, R<sup>5</sup> and R<sup>6</sup> may together form a ring and R<sup>8</sup>, may be identical or different, are hydrocarbon groups, and the catalyst is obtained by mixing a ligand or its symmetric isomer and a Lewis acid, wherein the ligand is represented by the following formula (chemical formula 1):

$$R^{1} \xrightarrow{N} N \xrightarrow{R^{4}} R^{4}$$

$$R^{1} \xrightarrow{X^{1}} X^{2} \cdots R^{2}$$

wherein  $R^1$  and  $R^2$ , may be identical or different, are hydrogen atoms, alkyl groups or aryl groups, at least one of  $R^1$  and  $R^2$  contains at least three carbon atoms,  $R^3$  and  $R^4$ , may be identical or different, are hydrogen atoms, alkyl groups containing one to four carbon atoms or alkoxy groups,  $X^1$  and  $X^2$ , may be identical or different, are represented by  $OR^9$ ,  $OR^9$ ,  $OR^9$ ,  $OR^9$ ,  $OR^{10}$  or  $OR^{11}$ , wherein  $OR^9$  to  $OR^{11}$  are hydrogen atoms or alkyl groups, and

the Lewis acid is represented by MY<sub>n</sub>, wherein M is Cu, Zn, Fe, Sc or a lanthanoid element, Y is a halogen atom, OAc, OCOCF<sub>3</sub>, ClO<sub>4</sub>, SbF<sub>6</sub>, PF<sub>6</sub> or OSO<sub>2</sub>CF<sub>3</sub> and n is 2 or 3.

2. The method as of claim 1, wherein R<sup>5</sup> is a hydrogen atom or an alkyl group, R<sup>6</sup> is an alkyl group, an alkyl aryl group, an aryl group or a sulfide group in which R<sup>5</sup> and R<sup>6</sup> may together

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form a five to six membered ring comprising carbon atoms and optional hetero atoms wherein sections of the ring may form an aromatic ring, R<sup>7</sup> is a hydrogen atom, an alkyl group, an alkyl aryl group or an aryl group and R<sup>8</sup>, may be identical or different, are alkyl groups.

3. A catalyst obtained by mixing a ligand or its symmetric isomer and a Lewis acid, wherein the ligand is represented by the following formula (chemical formula 1):

$$R^{1} \xrightarrow{N} N \xrightarrow{R^{4}} R^{4}$$

$$R^{1} \xrightarrow{X^{1}} X^{2} \cdots R^{2}$$

wherein R<sup>1</sup> and R<sup>2</sup>, may be identical or different, are hydrogen atoms, alkyl groups or aryl groups, at least one of R<sup>1</sup> and R<sup>2</sup> contains at least three carbon atoms, R<sup>3</sup> and R<sup>4</sup>, may be identical or different, are hydrogen atoms, alkyl groups containing one to four carbon atoms or alkoxy groups, X<sup>1</sup> and X<sup>2</sup>, may be identical or different, are represented by -OR<sup>9</sup>, -SR<sup>10</sup> or -NHR<sup>11</sup>, wherein R<sup>9</sup> to R<sup>11</sup> are hydrogen atoms or alkyl groups, and the Lewis acid is represented by MY<sub>n</sub>, wherein M is Cu, Zn, Fe, Sc or a lanthanoid element, Y is a halogen atom, OAc, OCOCF<sub>3</sub>, ClO<sub>4</sub>, SbF<sub>6</sub>, PF<sub>6</sub> or OSO<sub>2</sub>CF<sub>3</sub> and n is 2 or 3.

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